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10/022,108	12/13/2001	Georg G. A. Bohm	P01012US1A	2477

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EXAMINER

MAKI, STEVEN D

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/022,108

Applicant(s)

BOHM ET AL.

Examiner

Steven D. Maki

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 10 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-8,10-11,13-18,21-39 is/are pending in the application.
- 4a) Of the above claim(s) 26-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8,10,11,13-18,21-25,38 and 39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All. b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☒ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. 062906.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_.

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1) Claims 10-11 and 13-15 are objected to because of the following informalities:

Claim 10 should depend on claim 1 since claim 9 is canceled. Appropriate correction is required.

2) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Europe

3) **Claims 1, 7, 8, 10, 16-18 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Europe (EP 9250) in view of Schulze (US 2721185) and Lawson et al (US 5332810).**

Europe discloses a process for forming a free-flowing (vulcanizable) composite particles comprising:

mixing elastomeric particles ("rubber") and water to form "latex";

providing a "cocktail" by mixing nonelastomeric particles and water and adding solvent to this mixture;

mixing the "latex" and "cocktail", coagulating, filtering and drying to obtain a free-flowing powder ("premix");

**dry blending the free-flowing powder ("premix") with fillers and/or pigments.**

See at least page 1 lines 9-12, page 6 lines 10-15. Europe describes suitable nonelastomeric polymers at page 4 lines 5-13.

Hence, Europe teaches a **liquid state mixing step** and a **solid state mixing step** of the rubber with filler and thereby substantially discloses the claimed invention except that Europe does not specifically recite using carbon black as the filler.

However, it would have been obvious to one of ordinary skill in the art to use carbon black as the filler in Europe's process since Schulze teaches that carbon black is added to many vulcanizable elastomer mixes during compounding as a filler (col. 4 lines 20-21).

As to claim 1, it would have been obvious to one of ordinary skill in the art to add at least one "processing aid" to Europe's "latex" (e.g. directly or indirectly via a "cocktail") in view of Schulze's suggestion to add a "processing aid" (plasticizer / softener) such as fatty acids (polar organic compound) to a latex *before* solid state mixing (mixing in a Banbury mixer) to provide desired plasticizing action / softening of the rubber. See col. 1 lines 26-29, col. 4 lines 6-10, 45-66).

Furthermore, it would have been obvious to use the claimed functionalized rubber as the rubber in Europe's process in view of Lawson et al's teaching of a functionalized rubber having a predictable molecular weight range for mixing with carbon black.

Applicant's argument that there is no suggestion to use a functionalized rubber in the process of Europe is not persuasive. Europe teaches using various elastomers such as butadiene rubber (a diene rubber) in the disclosed process. Lawson et al teaches that the disclosed invention results in diene polymer and copolymer elastomers. Lawson et al also teaches that the invention polymers may be used with rubber such as

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polybutadiene. The benefit of Lawson et al's functionalized rubber is that a narrow predictable molecular weight range is obtained, which enables production of rubber having reduced hysteresis. A rubber having reduced hysteresis has less heat build up when subjected to mechanical stress.

Applicant's argument that the invention obtains improved carbon black dispersion is not persuasive since (1) no unexpected results over Europe have been shown, (2) the results in Table III are for a product formed using functionalized and oil extended poly(styrene co butadiene) and a cocktail containing zinc acid fatty salts whereas claim 1 fails to require the use of such a specific cocktail or specified elastomer, and (3) Schulze suggests adding a "processing aid" (plasticizer / softener) such as fatty acids (polar organic compound) to a latex *before* solid state mixing (mixing in a Banbury mixer) to provide desired plasticizing action / softening of the rubber

As to claim 7, Europe teaches drying.

As to claim 8, it would have been obvious to mix within a mixer having a net mixing chamber volume of at least 75 L operated at a fill factor of at least about 50 depending on the desired amount product to be formed since (1) Europe teaches dry blending the free flowing rubber with filler and then forming a useful shape / article and optionally (2) it is taken as well known / conventional per se to conduct mixing in a mixer of desired size.

As to claim 10, one of the additional plasticizers disclosed by Schulze is fatty acid. See col. 4 line 54.

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As to claim 16, it would have been obvious to shape and cure the composition in view of (1) Europe's teaching to form a useful article from the blend of rubber and filler and (2) Schultz's suggestion to form a tire tread from a vulcanizable composition comprising rubber and carbon black (co. 5 lines 36-48).

As to claims 17 and 18, the claimed amount of processing aid would have been obvious and could have been determined without undue experimentation in view of Europe's teaching to use 0.5-8 weight% elastomeric particles ("processing aid") or Schultz's suggestion to use 1-10 parts plasticizer (processing aid).

**4) Claims 2-6 rejected under 35 U.S.C. 103(a) as being unpatentable over Europe in view of Schulze and Lawson et al as applied above and further in view of Baranwal (US 3824206).**

As to claims 2-6, it would have been obvious to one of ordinary skill in the art to use a processing aid as suggested by Schulze in a cocktail as claimed for Europe's process in view of Baranwal et al's teaching to facilitate dispersion of an additive in the water or solvent in which the rubber is dispersed by dispersing the additive in a small volume of water or solvent as is conventional in making up such mixes (col. 5 lines 34-38). As to heating (claim 3), it would have been obvious to heat the cocktail as claimed since it is taken as well known / conventional per se to improve dispersion in a liquid mixture using heat.

**5) Claims 11 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Europe in view of Schulze and Lawson et al as applied above**

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**and further in view of Blow (Rubber Technology and Manufacture), Takaki et al (US 5006603) or admitted prior art (specification page 7 lines 16-18).**

As to claim 11, it would have been obvious to one of ordinary skill in the art to use a mixture of zinc fatty acid salts as the processing aid (plasticiser / softener) in view of the suggestion from Blow, Takaki et al or the admitted prior art to use zinc salts as processing aid / softener wherein Blow suggests using zinc salts of fatty acids such as Aktiplast as processing aid / plasticiser for rubber compounding, Takaki et al suggests using softening agent such as fatty acids or fatty salts such as zinc stearate as softening agent (col. 19 lines 44-61) for a rubber composition for a tire, and the admitted prior art teaches that Aktiplast GT comprising a mixture of zinc fatty acid salts is a known processing aid per se. With respect to Aktiplast GT, it is noted that Blow suggests using Aktiplast in a rubber composition.

As to claims 13-15, note Lawson et al's teachings regarding the functionalized rubber.

Paton et al

**6) Claims 21, 22, 24 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paton et al (US 2617782) in view of Schulz and Baranwal.**

Paton et al teaches mixing crude rubber, carbon black, vulcanizing and accelerating agents in a Banbury mixer. Hence, Paton et al teaches solid state mixing rubber and carbon black. Paton et al does not recite premixing the rubber with a processing aid.

Schulze teaches adding a "processing aid" (plasticizer / softener) such as fatty acids (polar organic compound), oils to a latex *before* solid state mixing (mixing in a Banbury mixer) to provide desired plasticizing action / softening of the rubber. See col. 1 lines 26-29, col. 4 lines 6-10, 45-66).

Baranwal discloses adding a processing aid (oil) to rubber in liquid form either as a latex or a solution before converting to solid rubber and then mixing with other ingredients. Baranwal also discloses a comparative example comprising: providing a solution ("cement") comprising solvent and styrene butadiene polymer ("rubber") having a low molecular weight with DSV 2.2; mixing the solution ("cement") with petroleum oil ("processing aid"); drying ("isolating") the solution ("cement") to obtain rubber comprising processing aid; mixing the rubber comprising processing aid with carbon black in a Banbury mixer ("solid-state" mixing the rubber comprising processing aid with carbon black) to obtain a dry mix. See col. 7 lines 7-20.

As to claim 21, 22, 24 and 39, it would have been obvious to one of ordinary skill in the art to add at least one "processing aid" such as fatty acids (polar organic compound) to a cement or latex comprising rubber and water or solvent, dry the resulting mixture to form a premix comprising rubber and the processing aid and then solid state mix the premix with carbon black in the Banbury mixer in view of (1) Paton et al's teaching to solid state mix rubber and carbon black in a Banbury mixer and (2) the suggestion from Schulze (col. 4 lines 5-, 45-67) and Baranwal (col. 2 line 7-26) to add a processing aid (e.g. fatty acid, oil) to a latex / solution comprising rubber before mixing in an Banbury mixer / internal mixer and (3) Schultz's suggestion to use rubber in liquid



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form, either as a latex or a solution (col. 2 lines 6-26). With respect to "consists essentially of one or more rubber polymers" (claim 39), Paton et al teaches using crude rubber as the polymeric component.

Applicant argues and examiner agrees that claim 21 is limited to providing a polymer cement. However, Paton et al requires crude rubber for solid state mixing and Baranwal teaches the common technique of forming raw rubber for solid state mixing using either latex or cement. No unexpected results for using cement over latexes has been shown.

Applicant argues that Baranwal does not teach a polar compound as a processing aid. More properly, Paton et al teaches solid state mixing and Schultz motivates one of ordinary skill in the art to add plasticizer to rubber prior to solid state mixing with a Banbury mixer. As to known plasticizers, Baranwal specifically identifies "fatty acids".

**7) Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Paton et al in view of Schulz and Baranwal as applied above and further in view of Blow, Takaki et al or admitted prior art.**

As to claim 23, it would have been obvious to one of ordinary skill in the art to use a mixture of zinc fatty acid salts as the processing aid (softener) in view of at the suggestion from Blow, Takaki et al or admitted prior art to use zinc salts as processing aid / softener wherein Blow suggests using zinc salts of fatty acids such as Aktiplast as processing aid / plasticiser for rubber compounding, Takaki et al suggests using softening agent such as fatty acids or fatty salts such as zinc stearate as softening

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agent (col. 19 lines 44-61) for a rubber composition for a tire, and the admitted prior art teaches that Aktiplast GT comprising a mixture of zinc fatty acid salts is a known processing aid per se. With respect to Aktiplast GT, it is noted that Blow suggests using Aktiplast in a rubber composition.

8) **Claims 1-8, 10, 16-18, 25 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paton et al in view of Schulz, Baranwal and Lawson et al.**

Paton et al teaches mixing crude rubber, carbon black, vulcanizing and accelerating agents in a Banbury mixer. Hence, Paton et al teaches solid state mixing rubber and carbon black. Paton et al does not recite premixing the rubber with a processing aid.

Schulze teaches adding a "processing aid" (plasticizer / softener) such as fatty acids (polar organic compound), oils to a latex *before* solid state mixing (mixing in a Banbury mixer) to provide desired plasticizing action / softening of the rubber. See col. 1 lines 26-29, col. 4 lines 6-10, 45-66).

Baranwal discloses adding a processing aid (oil) to rubber in liquid form either as a latex or a solution before converting to solid rubber and then mixing with other ingredients. Baranwal also discloses a comparative example comprising: providing a solution ("cement") comprising solvent and styrene butadiene polymer ("rubber") having a low molecular weight with DSV 2.2; mixing the solution ("cement") with petroleum oil ("processing aid"); drying ("isolating") the solution ("cement") to obtain rubber comprising processing aid; mixing the rubber comprising processing aid with carbon

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black in a Banbury mixer ("solid-state" mixing the rubber comprising processing aid with carbon black) to obtain a dry mix. See col. 7 lines 7-20.

As to claim 1, it would have been obvious to one of ordinary skill in the art to add at least one "processing aid" such as fatty acids (polar organic compound) to a cement or latex comprising rubber and water or solvent, dry the resulting mixture to form a premix comprising rubber and the processing aid and then solid state mix the premix with carbon black in the Banbury mixer in view of (1) Paton et al's teaching to solid state mix rubber and carbon black in a Banbury mixer and (2) the suggestion from Schulze (col. 4 lines 5-, 45-67) and Baranwal (col. 2 line 7-26) to add a processing aid (e.g. fatty acid, oil) to a latex / solution comprising rubber before mixing in an Banbury mixer / internal mixer.

Furthermore, it would have been obvious to use the claimed functionalized rubber as the rubber in Paton et al's process in view of Lawson et al's teaching of a functionalized rubber having a predictable molecular weight range for mixing with carbon black.

Applicant's argument that there is no suggestion to use a functionalized rubber in the process of Paton et al is not persuasive. Paton et al broadly teaches using rubber in the disclosed process. Lawson et al teaches that the disclosed invention results in diene polymer and copolymer elastomers. Lawson et al also teaches that the invention polymers may be used with natural or synthetic rubber. The benefit of Lawson et al's functionalized rubber is that a narrow predictable molecular weight range is obtained, which enables production of rubber having reduced hysteresis. A rubber having

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reduced hysteresis has less heat build up when subjected to mechanical stress.

Applicant's argument that the invention obtains improved carbon black dispersion is not persuasive since (1) no unexpected results over Paton et al have been shown, (2) the results in Table III are for a product formed using functionalized and oil extended poly(styrene co butadiene) and a cocktail containing zinc acid fatty salts whereas claim 1 fails to require the use of such a specific cocktail or specified elastomer, and (3) Schulze suggests adding a "processing aid" (plasticizer / softener) such as fatty acids (polar organic compound) to a latex *before* solid state mixing (mixing in a Banbury mixer) to provide desired plasticizing action / softening of the rubber

As to claims 2-6, it would have been obvious to one of ordinary skill in the art to use the processing aid in a cocktail as claimed in view of Baranwal et al's teaching to facilitate dispersion of an additive in the water or solvent in which the rubber is dispersed by dispersing the additive in a small volume of water or solvent as is conventional in making up such mixes (col. 5 lines 34-38). As to heating (claim 3), it would have been obvious to heat the cocktail as claimed since it is taken as well known / conventional per se to improve dispersion in a liquid mixture using heat.

As to claim 7, Schulz / Baranwal teach drying.

As to claim 8, it would have been obvious to mix within a mixer having a net mixing chamber volume of at least 75 L operated at a fill factor of at least about 50 depending on the desired amount product to be formed since (1) Paton et al teaches mixing the rubber and carbon black in a Banbury mixer and optionally (2) it is taken as well known / conventional per se to conduct mixing in a mixer of desired size.

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As to claim 10, one of the additional plasticizers disclosed by Schulze is fatty acid. See col. 4 line 54.

As to claim 16, it would have been obvious to shape and cure the composition in view of Schultz's suggestion to form a tire tread from a vulcanizable composition comprising rubber and carbon black (co. 5 lines 36-48).

As to claims 17 and 18, the claimed amount of processing aid would have been obvious and could have been determined without undue experimentation in view of Schultz's suggestion to use 1-10 parts plasticizer (processing aid).

**9) Claims 11 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paton et al in view of Schulz, Baranwal and Lawson et al as applied above and further in view of Blow, Takaki et al or admitted prior art.**

As to claims 11 and 13-15, it would have been obvious to one of ordinary skill in the art to use a mixture of zinc fatty acid salts as the processing aid (softener) in view of at the suggestion from Blow, Takaki et al or admitted prior art to use zinc salts as processing aid / softener wherein Blow suggests using zinc salts of fatty acids such as Aktiplast as processing aid / plasticiser for rubber compounding, Takaki et al suggests using softening agent such as fatty acids or fatty salts such as zinc stearate as softening agent (col. 19 lines 44-61) for a rubber composition for a tire, and the admitted prior art teaches that Aktiplast GT comprising a mixture of zinc fatty acid salts is a known processing aid per se. With respect to Aktiplast GT, it is noted that Blow suggests using Aktiplast in a rubber composition.

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As to claims 13-15, note Lawson et al's teachings regarding the functionalized rubber.

#### Remarks

10) Applicant's "election" with traverse of Species A in the reply filed on 7-10-06 is acknowledged. The traversal is on the ground(s) that (1) MPEP 818.02(a) does not provide authority for the restriction requirement, (2) no restriction was made prior to the office action dated 4-6-06 and (3) originally presented claim 10 includes several polar compounds including both metal carboxylates and high-HLB surfactants. This is not found persuasive for the following reasons. FIRST: Applicant apparently agrees that metal carboxylate such as mixture of zinc fatty acid salts and high HLB surfactant having specified HLB / molecular weight are related as species ("species A" and "species B" respectively). Applicant presents no argument explaining why they are not species. SECOND: Applicant apparently agrees that claim 10 is a generic claim to "species A" and "species B". See applicant comments as to claim 10 on page 7 of the response filed 7-10-06. THIRD: With respect to authority for the requirement, paragraph 1 of the last office action refers to 37 CFR 1.142(b) and MPEP 821.03, which recites 37 CFR 1.145. Examiner also directs attention to MPEP 818.02(a), which directs attention to MPEP 821.03. In short, 37 CFR 1.142 and 37 CFR 1.145 provide the required authority for the restriction requirement. Applicant is requested to clarify this part of the traversal of the restriction requirement. Is applicant arguing that an invention cannot constructively be elected by original presentation as set forth in MPEP 821.03? FOURTH: Applicant states "... Applicants believe that the examiner had

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searched each of the polar compounds original presented in claim 10" (page 7 of response filed 7-10-06). It is again noted that applicant apparently agrees with the examiner that **claim 10 is a generic claim whereas claim 11 is directed to "species A"**. This argument is not persuasive since generic claim 10 fails to require a search for all of the species recited therein. A search for all species of a generic claim is not required because disclosure of a single species of the generic claim in the prior art anticipates the generic claim. With respect to this species restriction, applicant is requested to clarify his argument. Is applicant arguing that a restriction between species is improper per se? Alternatively, is applicant admitting that species B (new claims 26-37) would have been obvious over the originally presented species A to which original claim 11 was directed? SIXTH: It is again noted that upon allowance of a generic claim (e.g. claim 10), applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all of the limitations of an allowable generic claim as provided by 37 CFR 1.141.

The requirement is still deemed proper and is therefore made FINAL.

With respect to the prior art rejections, applicant's arguments filed 7-10-06 have been fully considered but they are not persuasive. These arguments are addressed above.

11) No claim is allowed.

12) Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is (571) 272-1221. The examiner can normally be reached on Mon. - Fri. 8:30 AM - 5:00 PM.

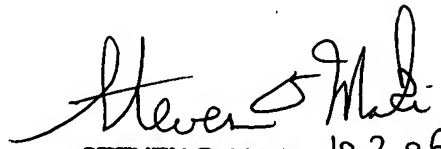
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Steven D. Maki  
October 2, 2006

  
**STEVEN D. MAKI** 10-2-06  
**PRIMARY EXAMINER**